THE RELATIONSHIP OF COGNITIVE STYLE TO INTERPERSONAL INTERACTION AND SOCIAL PARTICIPATION OF THE YOUNG CHILD

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CHAPTER I

INTRODUCTION

People with field independent cognitive styles are different in their interpersonal behavior from people with field dependent cognitive styles in ways that are predicted by the theory of psychological differentiation (Witkin, Dyke, Faterson, Goodenough, & Karp, 1962). Field independent people place greater reliance on internal referents, are not very interested in others, show both physical and psychological distancing from other people, and prefer non-social situations. In contrast, field dependent people have a tendency to rely primarily on external referents for information processing, show strong interest in others, prefer to be physically close to others, are emotionally open, and gravitate toward social situations. Field dependent people also get along better with others (Beller, 1958; Coates, Lord & Jakabovics, 1975; Dreyer, McIntire, & Dreyer, 1973; Oltman, Goodenough, Witkin, Friedman, & Friedman, 1975). Schreiber (1972) found that a group of male college athletes affiliated with team sports (football, hockey, baseball) proved to be significantly more field dependent than the group affiliated with individual sports (gymnastics, track, swimming, and wrestling). Coates et al.

(1975) examined the extent to which relatively field independent and field dependent children played alone or together with other children in a preschool setting. At the end of the school year, teachers made rankings for each child on the amount of time each had spent during the year in five free play situations. Three of these had social interaction as the primary focus: plays in the doll corner, plays formal games, and plays with others in the block corner. The other two consisted of solitary tasks involving little communication with others: plays alone at the task table and plays alone with blocks. Field independent children, both boys and girls, were rated by their teachers as having spent significantly more time in solitary play and field dependent children in social play. Nadeau (1968) also used teachers' ratings in a study of nursery school boys and found that teachers judged field independent boys as engaging in more time in solitary plan than field dependent boys.

Iscoe and Carden (1961) used a sociometric technique with 11-years-olds and found that field independent boys and field dependent girls were preferred playmates more often by their peers. A similar result was found with 113 kindergarten children by Dreyer et al., (1973) for playmate choices but not for work partners. In summary, it would appear from the results of these studies that children with a more field dependent cognitive style are judged by their teachers to engage in greater frequency of peer interactions

than children with a more field independent cognitive style.

Peer interactions have been studied over the years by researchers interested in their value to the young child's socio-cognitive development. Piaget (1928) maintained that peer interactions provide the child an opportunity to recognize the different perspectives of others, and to see the need for consideration of points of view of others, so in turn the child's own point of view will be respected. Piaget said peer interactions and play serve as the vehicle and as the means by which children construct knowledge for both social development and cognitive growth. Following Piaget, Castle and Richards (1979) found that interpersonal interactions lead the young child away from egocentrism and facilitate the development of role taking ability. Children who engage in greater frequency of interpersonal interactions were better able to take another's perspective.

Bowd (1975) investigated the relationship of perceptual egocentrism to the field dependent cognitive style of kindergarten children. Bowd found that egocentrism was highly correlated with field dependence: more field dependent children tend to be more perceptually egocentric. In contrast, field independent children were less perceptually egocentric. Rubin (1976) studied the role taking ability and social interactions of preschool children. By using the social participation categories of Parten (1932), Rubin found that the children who scored higher on role taking tasks engage more often in associative and cooperative play.

The results of these studies suggest that children who are field independent may engage in greater frequency of interpersonal interactions. Castle and Richards (1979) and Rubin (1976) have indicated that children who are better role takers engage in greater frequency of interpersonal interactions. Considering also the result of the Bowd (1975) study it should logically follow that children who are field dependent will engage in fewer interpersonal interactions. This conclusion is in direct contrast to the conclusion drawn from the Coates et al. (1975), Nadeau (1968), Iscoe and Carden (1961) and Dreyer et al. (1973) studies: that children who are more field dependent engage in more interpersonal interactions.

These contradictory conclusions raise an interesting research question. What are the characteristics of interpersonal interactions of field independent children? Do field independent children interact more often or less often with others than field dependent children? The present study is designed to help answer these questions and shed some light on this issue.

The researchers (Coates et al., 1975; Nadeau, 1968) who concluded that children with a more field dependent cognitive style engage in greater frequency of interactions employed teacher ratings as the measure for interactions. Teachers were asked at the end of the school year to make judgments about their students' interpersonal interactions. This method for determining interaction frequencies is based

on subjective judgments in which the teachers had to rely on their memories to recall student behavior.

Castle and Richards (1979) and Rubin (1976) used systematic observation of behavior to determine interpersonal interactions. Systematic observation of behavior is a much more objective measure of interactions because behavior is recorded systematically when it occurs and over a long period of behavioral observations. It does not rely on memory or subjective judgments. An observer using this method merely records the observed behavior and then a frequency count of interactions is made at the end of the observation period.

Systematic observation of behavior is a more accurate and objective research method and will be employed in the present study to determine interaction frequencies for field independent/dependent children. Therefore, the methodology of the present study is an improvement over that employed by Coates et al. (1975) and Nadeau (1968). In the present study, it is predicted that children with a more field independent cognitive style will engage in more interpersonal interactions. This prediction, although contradictory to the line of research followed by those coming from a psychological differentiation approach, logically follows the line of research of Castle and Richards (1979), Rubin (1976), and Bowd (1975) coming from a cognitive structural orientation.

Statement of the Problem

The purpose of this study was to examine the relationship of cognitive style (field independence/field dependence) to the frequency of interpersonal interactions and to the level of social participation of the young child. Forty-eight children aged three to five years enrolled in the Child Development Laboratories at Oklahoma State University were given the Preschool Embedded Figures Test (PEFT) as a measure of cognitive style to determine the extent to which they are field independent/dependent. The children were observed in a free play situation for eight consecutive weeks. Frequency of interpersonal interactions and level of social participation were systematically recorded over the eight week period.

Since Bowd (1975) found that young children who were less egocentric would have a field independent cognitive style, and Castle and Richards (1979) found that children who were less egocentric would engage more in interpersonal interactions, it follows that children who are more field independent will engage in greater frequency of interpersonal interactions, assuming that the frequency of interpersonal interactions observed in the free play situations is representative of such contact outside the school setting.

Hypothesis I: Children who have higher scores on the Preschool Embedded Figures Test will engage in greater frequency of interpersonal interactions.

Finally, both Bowd (1975) and Rubin (1976) investigated egocentrism of young children. Bowd found that young children who were less perceptually egocentric would have a field independent cognitive style, and Rubin found that children who were less egocentric would engage more in higher levels of social participation (i.e. associative and cooperative play). Therefore, it should follow that children who are more field independent will engage in higher levels of social participation, assuming that the social participation observed in the free play situations is representative of such contact outside the school setting.

Hypothesis II: Children who have higher scores on the Preschool Embedded Figures Test will engage in higher levels of social participation.

Definition of Terms

For the purpose of this study, the following terms are defined:

Cognitive Style: Refers to the characteristic modes of functioning that show throughout the perceptual and intellectual activities in highly consistent and pervasive ways (Witkin et al., 1962).

Field Independence: Refers to the ability to perceive and overcome the influence of the surrounding field or the ability to distinguish an item from its context (Witkin et al., 1962).

Field Dependence: Refers to the difficulty to overcome

the influence of the surrounding field or to separate an item from its context (Witkin et al., 1962).

Interpersonal Interactions: Verbal and nonverbal communications which involve a reciprocal encounter with another child or adult (Castle, 1975).

Role Taking Ability: The degree to which the child is able to infer a different perceptual, affective, or cognitive perspective involving another's capacilities, attributes, preferences, feelings, thoughts, or perceptions (Castle, 1975).

Egocentrism: The degree to which one uses self as a reference axis (Castle, 1975).

Child-Centered Environment: Preschool classroom in which activities are "child centered" i.e. initiated by the child. Children are free to interact with peers, teachers, and equipment (Castle, 1975).

Levels of social participation:

Onlooker Behavior: The child spends most of the time watching the other children play. He often talks to the children whom he is observing, asks questions, or gives suggestions (Parten, 1932).

Solitary Play: The child plays alone and independently with toys that are different from those used by other children within speaking distance and makes no effort to get close to other children. He pursues his own activity without reference to what others are doing (Parten, 1932).

Parallel Play: The child plays independently. He

plays with toys that are like those which other children around him are using, but he plays with the toys as he sees fit, and does not try to influence or modify the activity of the children near him. He plays beside rather than with the other children (Parten, 1932).

Associative Play: The child plays with other children. The conversation concerns the common activity. All the members engage in similar if not identical activity, but there is no organization of the activity of several individuals around any material goal or product (Parten, 1932).

Cooperative Play: The child plays in a group that is organized for the purpose of making some material products, or of dramatizing situations of adult and group life, or of playing formal games. There is a marked sense of belonging to the group. The control of the group situation is in the hands of one or two of the members who direct the activity of the others (Parten, 1932).

CHAPTER II

REVIEW OF THE LITERATURE

During the last two decades there has been a rapid growth of research on individual differences in the field dependent-independent cognitive styles dimension. Witkin et al. (1962) believe that field dependent and field independent people are different in degree of self-nonself segregation which is a product of increasing awareness of a distinction between inner and outer, leading to the formation of boundaries between self and other people. A more limited repertoire of internal referents, associated with less self-nonself segregation, encourages reliance on external referents. The tendency to rely primarily on internal referents in information processing is called a field independent cognitive style. The tendency to rely greater on external referents is called field dependent cognitive style.

Less research has been done on the expression of field dependence-independence in the social-interpersonal domain than in the cognitive domain, especially during the early years of life. Goodenough and Witkin (1977) explained two reasons for this: (1) the social aspects of field dependence-independence have been developed relatively recently,

and (2) it is difficult to devise effective tests of the wide range of social behaviors implied in the theory. Most studies of field dependent-independent cognitive style in the social orientation domain have been experimental in design and have used older children or adults as subjects. In 1972, Coates developed the Preschool Embedded Figures Test (PEFT) which makes the study of preschool children possible. It seems important to identify both motivational variables such as social-interpersonal variables and cognitive variables as early as possible in life so that one could begin to support the interaction of these variables during development.

Field Dependence-Field Independence

Witkin et al. (1962) introduced the differentiation construct to accommodate the study of individual differences in establishing the upright in space. The differentiation construct was also intended to be used as a guide for the broad patterns of individual psychological functioning including intellect, perception, personality characteristics, and interpersonal behaviors. Differentiation refers to the complexity of structure of a psychological system and the nature of its relation to its surroundings.

Witkin, Goodenough and Oltman (1977) explained the differentiation of the individual as an organismic system. A less differentiated system is in a relatively homogeneous state, and has a greater connectedness between self and

others. A system which is more differentiated shows greater boundaries between an inner core, identified as the self, and the outer world, particularly other people. There is more separation among the psychological functions.

In the study of individual differences in establishing the upright in space, Witkin et al. (1962) employed two tests. The Rod-and-frame test (RFT) required a person to bring the tilted rod, which is in the center of a tilted frame, to the upright position. Some people tend to use the external field as the main referent for judging the position of the rod, aligning the rod with the tilted frame in order to perceive the straight of the rod. Other people use the perceived position of the upright body as a referent to bring the rod close to the upright. The other test is the Body-adjustment test (BAT). In this test, a person seated within a small tilted room is required to adjust the body to the vertical from an initially tilted position. Some people adjust the body to the vertical position regardless of the orientation of the surrounding room which indicates that the body is experienced as discrete from field and the information from within self provides the main referent. Other people tilt the body far away from the upright position which indicates that the body is not experienced separately from the surroundings and that the external field is used as the main referent.

Furthermore, Witkin and Goodenough (1977) stated that field dependence-independence, conceived as an expression

of the self-nonself aspect of differentiation, has obvious implications for interpersonal behavior.

> Experience of one's own self as separate and distinct from that of other, and, with it, reliance on internal referents, are likely to make for autonomy in social relations. In contrast, a less delineated self and primary reliance on external referents limit personal autonomy. Whether internal or external referents are given greater emphasis affects, in turn, the individual's orientation toward the main source of external referents-other people (Witkin & Goodenough, 1977, p. 662).

Dependency

Beller (1958) studied autonomous-achievement-striving and dependent behavior of nursery school children. Beller found that for the group as a whole, dependence scores did not significantly relate to field dependence-independence. On the other hand, the autonomous-achievement-striving scores were significantly higher for field independent children.

Consistent with Beller's observations that field dependence is not related to emotional dependence, field dependent persons are likely to rely on others as a source of information, but they are not dependent in other ways as well. The descriptions of field dependence-independence were adopted when the research was still limited to the perceptual domain. They were intended to refer to greater or lesser reliance on the prevailing visual field.

The results from Beller's study indicated that field independent people are likely to be rated high on such

attributes as autonomy, showing initiative, responsibility, self-reliance, and ability to think for oneself. For field dependent people, reflecting their greater need for external guidance in providing structure, they tend to seek information from others as an aid to structuring such situations. It is reasonable to expect them to engage in behavior that is helpful in making external referents accessible to them when they need them. So field dependent people are alert to social cues, physical and emotional closeness to others, and prefer interpersonal interactions while field independent people are not particularly attentive to social cues, show distance from others, and prefer impersonal situations.

There is evidence that field dependent people tend to be selectively attentive to social information from other's behavior, whereas field independent people tend to be inattentive to such information. Ruble and Nakamura (1972) examined looking behavior in a problem solving situation. The subjects were 56 second and third grade children. The Gerard Rod-and-frame test was a measure for cognitive field dependence-independence. Each subject was required to work on a puzzle similar to the puzzle that the experimenter put together within the child's view. Results showed that field dependent children glanced at the experimenter more often than field independent children. Moreover, field dependent children tended to glance more often at the experimenter's face and field independent children at the experimenter's

puzzle. Johnson (1974) supported Ruble and Nakamura's finding, that when there is an external source of information available during problem solving, field dependent people are more likely to look at the source's face than field independent people.

Konstadt and Forman (1965) investigated the external directedness of field dependence with 10 year olds and found that under the approval condition, the field dependent children did not look at the experimenter any more than field independent children. But under the disapproval condition, in which the children were made to feel that they did not do well, field dependent children glanced at the experimenter significantly more often than field independent children. Konstadt and Forman suggested that for field dependent children, looking at others during problem solving may be stimulated by a strong need for information from the outside as much as by the availability of a clearly designated external source of information.

Nevill (1974) found that field dependent adults engage in significantly greater amounts of eye contact with an interviewer than did field independent adults. Crandell and Sinkeldam (1964) found that field dependent children who were 6 to 12 years old also need the physical contact with adults in help seeking, affection seeking, and recognition approval seeking from adults.

Fitzgibbons and Goldberger (1971) examined the attention to social information, especially in the medium of

verbal stimuli. Their results showed that field dependent subjects had better recall of social words. A similar result has been found by Goldberger and Bendich (1972) who examined the relation of field dependence and social responsiveness as determinants of spontaneously produced words of university students. After they were given the Portable rod-and-frame Test, Witkin's embedded-figures Test, and the Human Figure drawing Test, all subjects were asked to write a word every 2½ seconds for 30 words. But for a third condition the subjects were blindfolded and asked to do the same. The data showed that the field dependent subjects incorporated more social words in their free associations from a previously heard incidental word list.

In the area of conflict resolution, Oltman, Goodenough, Witkin, Freedman, and Friedman (1975) investigated the social interpersonal behavior of homogeneous and heterogeneous groups with respect to the cognitive style of their members. The subjects were 40 women college seniors assigned to two-person-groups of three kinds: (a) both members were field dependent, (b) both were field independent, or (c) one member was field dependent and the other was field independent. The pair was asked to discuss several choice-dilemma problems for which it has been established that they disagreed. The pair that was homogeneous field independent more often failed to resolve their conflict than did the field dependent pair or the pair in which one member was field independent. Moreover,

in heterogeneous groups, the conflicts were more often resolved by shifts of opinion on the part of the field dependent partner than the field independent partner. These results suggested that field dependent people tend to be willing to contribute effectively to conflict resolution by accommodating their views to those of others. And from the rating of how well she liked her partner after the session, the results showed that the field dependent subjects were attentive to other's views, take account of these views in defining their own positions and attempt to avoid showing hostility toward others. The field dependent subjects know more people, and are better at remembering social material, such as names.

Popularity

Field dependence-independence has been studied in the area of popularity too. Iscoe and Carden (1961) used the Children's Manifest Anxiety Scale (CMAS) as a sociometric measure and Witkin's Embedded-Figure Test as a measure of field dependence-independence with sixth grade children. The results supported the finding of Witkin and his associates regarding the field dependence-independence dimension and personality characteristics. The data suggested that field dependent girls and field independent boys were more popular. Iscoe and Carden emphasized that, at the age of 11-12 years, the girl who is field independent is not likely to enjoy high social status with her peers. In contrast,

the relatively field independent boy is more likely to gain wider acceptance by his peers. Dreyer et al. (1973) found similar results with 113 kindergarten children. In a study of a relationship of sociometric status and cognitive style, the children were administered the Portable Rod-and-frame Test and the Children's Embedded Figures Test along with the Wechsler Intelligence Scale. For the Sociometric choices, children had a chance to choose playmates in free play situations and partners to work in school-related tasks. The results indicated that in the free play situation, field independent boys chose field independent children as partners, regardless of sex, but field independent girls tended to choose field dependent girls as partners. For the school-related tasks, boys chose partners like themselves in cognitive style, regardless of sex. But for girls, field dependent girls tended to choose field independent boys. The analysis across tasks also indicated that only the field dependent girls had significantly higher sociometric scores for the free play situation than they did for the task situation. These results support the finding of Iscoe and Carden (1961) that field dependent girls were chosen more in free play situations.

In addition, field dependent people tend to evaluate others more positively than do field independent people. DiStefano (1969) found that teachers who are field dependent rated their students more highly on most of the dimensions;

of kindness, intelligence, rationality, sociability, open-mindedness, and relaxation, at the end of the semester. These teachers also gave their students higher grades.

Interpersonal Interactions

Coates (1972) found from her investigation with nursery school children that field dependent girls preferred to play with others in the doll corner whereas field independent girls preferred to work alone on individual projects. Coates et al. (1975) examined the social play behavior of preschool children. They predicted that field dependent children would spend more time in play behavior than field independent children. All subjects were tested individually with the Preschool Embedded-figures Test and the Wechsler Preschool and Primary Scale for Intelligence. The two researchers observed the play activities and then listed all general activities in the free play of the children. The play categories included: (1) plays in the doll corner, (2) plays formal games, (3) plays with others in the block corner, (4) plays alone at the task table, and (5) plays alone with blocks. The activities which were felt to focus predominantly upon social interaction included: plays in the doll corner, plays formal games, and plays with others in the block corner. At the end of the school year, the two teachers who had been with the children all year were asked to rank each child for each of the categories from 1 to 5 in order

of amount of time spent in each activity over the year. The results confirmed that for both boys and girls, field dependent children are rated by their teachers as more socially oriented in their play while field independent children tended to prefer to play in relative isolation. Nadeau (1968) obtained the same result from the investigation of the cognitive style of 108 preschool children. The teachers judged field independent boys as engaging in more time in solitary play than did field dependent boys.

Interests and Vocational Choices

Sports are another area that have been examined from the standpoint of solitary or group activities. Schreiber (1972) determined extent of field dependence in a group of male college athletes affiliated with team sports (baseball, football, basketball, and hockey) and another group affiliated with individual sports (gymnastics, track, swimming, and wrestling). The group affiliated with team sports proved to be significantly more field dependent than the group affiliated with individual sports. Barrel and Trippe (1975) found similar results from a study with professional ballet dancers, highly skilled performers in tennis, soccer, cricket, and track and field athletes, and medium ability level player in the same four sports. The subjects were given the Portable Rod-and-frame Test as a measure of field dependence-independence. They found that the highly skilled tennis players were significantly more

field dependent than top class track and field athletes and medium-ability level tennis players.

Finally, direction of these research findings indicates that field dependence-independence guides people toward interpersonal or impersonal domains in important real-life activities. Witkin, Moore, Goodenough, and Cox (1977) studied career differentiation and concluded that field dependent people are likely to favor educational-vocational domains that feature social content which requires interpersonal relations for their conduct. On the other hand, the relatively field independent people are likely to favor the domain in which social content and relations with other people are not especially involved, but for which analytical skills are important. Witkin et al. (1977) stated that more field independent people are in the mathematics and science domain, such as engineers, and are such health professionals as physicians, dentists, and psychiatrists. In contrast, field dependence people express their interest in interpersonal domains that frequently fall in the welfare-helping-humanitarian domain, including social worker, minister, teacher of social science, elementary school teacher, and business administrator.

The educational-vocational choices of field dependent and field independent people are highly consistent with their interests. Witkin, Moore, Oltman, Goodenough, Friedman, Owen, and Raskin (1977) developed a longitudinal study which showed that students tended to shift their

choices toward greater compatibility with their cognitive styles. For example, field independent students who choose elementary school teaching as a primary major tended to change to mathematics or natural sciences but field dependent students who choose the same preliminary major were more likely to remain with it.

Sex Differences

Coates (1972) found a significant sex difference as assessed by the Preschool Embedded Figures Test with 3 to 5 year olds. Girls showed more ability to disembed than boys during these ages. Derman and Meissner (1972) also found the same result with children aged 4 to 5 years.

Other evidence of greater field independence in girls than in boys during the preschool years comes from Herman (1968) in which children 4 to 6½ were given the Wechsler Preschool and Primary Scale of Intelligence. Herman found that overall, girls performed significantly better than boys on the Block Design subtest, a measure demonstrated by Coates (1972) to be highly correlated with the performance on the Preschool Embedded Figures Test. Coates (1974) examined 298 children who were 3 to 6 years old by giving them the Preschool Embedded Figures Test and found that overall, girls were more field independent than boys between the ages of 3 and 6 years.

Coates et al. (1975) used the teacher's rating of each child activity in a free play situation and the Preschool

Embedded Figures Test as a measure of cognitive style, and found that preschool field dependent girls spent more time of their free play in social play activities (play in the doll corner and play in formal games) than did their field independent counterparts. These findings were extended to preschool boys as well.

In addition, Coates (1972) reported a significant progressive increase across the age span of 3 to 5 years in level of disembedding skill on the PEFT for both girls and boys. A similar increase was observed for children ranging from 4 to 5 years of age in the longitudinal study by Dermer and Meissner (1972).

In summary, people are likely to function at more or less the same level of differentiation in interpersonal behavior. People with more differentiation, called field independent, show more ability in separating out part of an organized field from the whole field. On the other hand, people with less differentiation, called field dependent, tend to use the external field as a referent and are less likely to separate out part of an organized field from the whole field.

Field dependent people are attentive to the views of others; are sensitive to social cues; have an interpersonal orientation encompassing a strong interest in people, prefer to be with other people, have emotional openness, and in some circumstances, facility in getting along with others. For field independent people, there is evidence of greater

skill in cognitive analysis and structuring. They have more autonomy, show initiative, responsibility, self-reliance, and have ability to think for themselves (Witkin & Goodenough, 1977).

Social Participation

Peer interaction has been studied over the years by researchers interested in its value to the young child's socio-cognitive development. Piaget (1928) maintained that peer interactions provide the child an opportunity to recognize the different perspectives of others, and to see the need for consideration of points of view of others, so in turn, the child's own point of view will be respected. Piaget said peer interactions and play serve as a vehicle and as the means by which children construct knowledge for both social development and cognitive growth (Brunner, 1972; Kohlberg, 1968).

Smilansky (1968) followed Piaget's belief about peer interactions by elaborating upon Piaget's belief about peer interactions by elaborating upon Piaget's original categories of cognitive play and labeling them as: (1) functional play - simple repetitive muscle movement with or without objects; (2) construction play - manipulation of object to construct or to create something; (3) dramatic play - the substitution of an imaginary situation to satisfy the child's personal wishes and needs, and (4) games with rules - the acceptance of prearranged rules and the adjust-

ment to these rules. These four types of play are thought of as developing in relatively fixed sequence with functional play appearing in infancy and games with rules appearing during the concrete operational period (7 to 11 years).

Parten (1932) developed 6 categories of social participation which are: (1) unoccupied behavior - watching anything that happens to be of momentary interest; (2) onlooker behavior - observing a particular group of children rather than anything else that happens to be exciting; (3) solitary play - playing alone with different toys from those of other children; (4) parallel play - the child plays independently with toys that are like those used by others, playing beside rather than playing with other children; (5) associative play - the child plays with other children but no organization of the activity, no goal or product; and (6) cooperative play - the child plays in a group that is organized for the purpose of making some material product or goal, or of dramatizing situations, or of playing formal games. Parten (1932) used these social participation categories in the observation of nursery school children and found that the older the child, the more he plays in the highly integrated groups (associative and cooperative play group). Parten also found that for nursery school children, parallel play was the most frequent type of play in which they participated. It indicated that the social quality of play follows a

sequence, with solitary and parallel play predominating at earlier ages; associative and cooperative becoming predominant in older preschoolers. Barnes (1971) replicated this work by observing 42 preschoolers 3-5 years old in a daily 1-hour free-play session for 12 weeks and found that preschoolers had a less high level of social play than Parten reported in her study but that the sequence was similar. Barnes gave two possible explanations for such change which included: (a) more hours that preschoolers were exposed to the mass media, (b) less time spent in free play periods with peers, and (c) the marked reduction in family size that has occured in the last two decades.

Parten (1933) extended the study of social participation of nursery school children from the 1932 study by looking at the factors influencing the child's choice of playmates, the size of preschool groups, and the social value of various activities, games and toys. The 34 two-to-four year olds were observed daily in free play situations. Parten found that among the girls 81 per cent of the five favorite playmates were other girls; and among the boys 62 per cent were other boys. Play group size was varied from two to fifteen but small groups of two were the most popular size, and the tendency to play in groups of five was clearly increased with age. Playing house was the most social type of play engaged in the nursery school children.

Smith (1978) reexamined the solitary and parallel play

of 48 preschoolers by using 9 months longitudinal observation period. He found that parallel play was found throughout the preschool period in 2 to 5 year old children (Parten, 1932; Barnes, 1971). Parallel behavior decreased with age. Most 3- and 4-year olds moved from mainly solitary to mainly group behavior directly. However, there were some periods of predominantly solitary behavior, altering with predominantly group behavior, which seemed to be an option for these ages, in a way which was not for younger ones.

Social Participation and Cognitive Play

Rubin, Maioni, and Hornung (1976) combined the social participation categories from Parten with the cognitive play schemes of Smilansky. From observing the play behavior in the free play situation for 1 minute for 30 consecutive school days of preschool children, they came out with the result that middle-class preschool children engaged in significantly less parallel play and functional play, and significantly more associative, cooperative and constructive play than did their lower-class age mates. Furthermore, a sex difference was found; females engaged in significantly more constructive and less dramatic play than did their male counterparts. Females also engaged in significantly more solitary-constructive and parallel-constructive activities than males. These findings appear to support the Moore, Evertson, and Brophy (1974) study in which girls tended to

be more involved in educational solitary play (a category which appears to be analogous to constructive level) than boys. Moore et al. found that over 50 percent of preschoolers' solitary play was educative or goal-directed in nature. Rubin, Watson, and Jambor (1978) used both social participation categories of Parten and the cognitive play categories of Smilansky to examine the comparison of the free play behavior of preschool children and kindergarten children. The 27 preschoolers, age 45 to 59 months, and 28 kindergarteners age 58 to 69 months were observed during free play for 1 minute on 30 consecutive school days. The order of observation was randomized daily. The results showed that the kindergarten children displayed less unoccupied, onlooker, solitary and functional activity and more group and dramatic play than preschoolers. Examinations of the combined Parten-Smilansky play categories revealed preschoolers engaged in significantly more solitary-functional and parallel-functional play and less in parallel-constructive, parallel-dramatic play, and group dramatic play than their kindergarten children counterparts.

Rubin and Krasner (1979) studied changes in play behaviors in a developmental manner in a short-term longitudinal study of ten 3-year-olds and ten 4-year-old preschoolers. Children were observed during each day for four 3-week periods over three months. The coding of behavior was based on Parten's categories of social parti-

pation (unoccupied, onlooker, solitary, parallel, group) and Smilansky's categories of cognitive play (functional, Constructive, games with rules). Two additional categories were included; reading and active conversation. The results indicate that children decreased the amount of time spent in unoccupied, onlooker, solitary-functional, and all functional play, and increased the amount of time spent in reading, games, parallel-dramatic, all group, and all dramatic play. A similar study was conducted by Spenseller and Jaworski (1979) for the longitudinal analysis of social and cognitive complexity in play behavior of toddler (14-30 months) and preschoolers (30-48 months) in child-care settings. The observational data were collected on video-tape and coded according to Parten's categories of social participation and Piaget's cognitive play. Results supported the sequences outlined by Parten (onlooker, solitary, parallel, associative and cooperative play), and Piaget (practice play, symbolic play, and games with rules), although the amount of associative and cooperative play at older ages was not as great as Parten reported (1932). Play complexity increased as age increased. Sex differences were obtained for cognitive complexity but not for social complexity. In addition, this study found that the social complexity was a more useful predictor than cognitive complexity in the developmental progress of young children.

Following Piaget's belief that egocentrism declines when role taking ability improves, Castle and Richards

(1979) investigated the interpersonal interactions and the role taking ability of preschoolers. The subjects were individually administered role taking tasks and then observed for 11 consecutive weeks. Castle and Richards found that interpersonal interactions lead the young child away from egocentrism and facilitate the development of role taking ability. Children who engage in greater frequency of interpersonal interactions were better able to take another's perspective. This finding was in line with the Rubin (1972) study in which communicative egocentrism was significantly related to the popularity of the kindergarten children. Deutsch (1974) and Rubin and Maioni (1975) also found similar results with preschool children aged 3 to 5 years, in that the communicative egocentrism was significantly related to popularity.

Rubin (1976) studied role taking ability and social participation of preschoolers by using the social participation categories of Parten (1932). He found that children who scored higher on role taking tasks engaged more often in higher levels of social participation (associative and cooperative play). The results from these studies suggest that children who are better able to take another's perspective engage in more frequency of social participation.

Sex Differences

Parten (1933) found sex differences among favorite playmates from observing nursery school children. Among

the girls 81 per cent of the five favorite playmates were other girls; and among the boys 62 per cent were other boys. Rubin et al. (1976) combined the social participation categories of Parten and the cognitive play schemes of Smilansky. From observing the play behavior in free play situations of preschool children they found that females engaged in significantly more constructive and less dramatic play than did their male counterparts. Females also engaged in significantly more solitary-constructive and parallel-constructive activities than males. These findings appear to support Moore, Evertson, and Brophy (1974) in which girls tended to be more involved in educational-solitary play than boys. Rubin, Watson and Jambor (1978) used both Parten's participation categories and Smilansky's cognitive play categories to examine the comparison of free play behavior of kindergarten and preschool school. The results showed that females engaged in more parallel-constructive and less parallel-dramatic play than males. These data supported the earlier finding of Rubin et al. (1976) who reported that females displayed more sedentary activities while males engaged in dramatic play.

Field Dependence-Independence and Social Participation

Witkin et al. (1962) stated in their psychological differentiation theory that field dependence-independence,

conceived as an expression of the self-nonself aspect of differentiation, has implications for interpersonal behaviors. Field dependent people place greater emphasis on the external field, are less able to separate self from others, and are attentive to social information. They tend to look at other's faces, engage more in eye-contact with others, seek physical and emotional closeness to others, seek recognition approval, and affection from adults. On the other hand, field independent people have more autonomy, self-reliance, use fewer social cues, initiate activity and are responsible (Coates et al., 1975; Nadeau, 1968; Schreiber, 1972; Iscoe & Carden, 1961; Dreyer et al., 1973; Ruble & Nakamura, 1972; Johnson, 1973; Konstadt & Forman, 1965; Nevill, 1974; Crandell & Sinkeldam, 1964).

Castle and Richards (1979) studied the interpersonal interactions and the role taking ability of preschoolers and found that interpersonal interactions lead the young child away from egocentrism and facilitate the development of role taking ability. Children who engage in greater frequency of interpersonal interactions were better able to take another's perspective. Bowd (1975) investigated the relationship of perceptual egocentrism to the field dependent cognitive style of kindergarten children. Bowd found that egocentrism was highly correlated with field dependence; more field dependent children tend to be more perceptually egocentric. In contrast, field independent

children were less perceptually egocentric. Rubin (1976) studied the role taking ability and social interactions of preschool children. By using the social participation categories of Parten (1932), Rubin found that children who scored higher on role taking tasks engaged more often in associative and cooperative play.

The results of these studies suggest that children who are field independent may engage in greater frequency of interpersonal interactions. Castle and Richards (1979) and Rubin (1976) have indicated that children who are better role takers engage in greater frequency of interpersonal interactions. Considering also the result of the Bowd (1975) study it should logically follow that children who are field dependent will engage in fewer interpersonal interactions. This conclusion is in direct contrast to the conclusion drawn from the studies of Coates et al. (1975), Nadeau (1968), Iscoe and Carden (1961), Dreyer et al. (1973) that children who are more field dependent should engage in more interpersonal interactions.

CHAPTER III

METHOD AND PROCEDURE

Research Setting

The observation data were collected from five Child Development Laboratories at Oklahoma State University, Stillwater, Oklahoma. The setting was a child-centered nursery school classroom where three to five year old children were free to interact with peers, teachers, and equipment. Four laboratories were located in the campus area and one laboratory was located in the married student housing area. The size of the classrooms varied. Two laboratories were morning sessions, from 3:30 to 11:15 and the other two laboratories were afternoon sessions, from 12:30 to 3:15. One of the laboratories was an all day program, 7:50-5:10.

The classrooms were divided into several learning centers in order to provide a rich environment to enhance the self-oriented, discovery, and exploration of the children. These learning centers were:

1. Science center - included plants, animals, rocks, leaves, globe, measuring tools, magnet, magnifying glasses, scientific magazine, float and sink materials, and bulletin board.

2. Manipulative center - included geometric shapes of plastic and wood, construction paper, crayons, scissors, glue, small pieces of wall paper design, old magazines, puzzles, table and chairs.
3. Housekeeping center - included toy telephone, full length mirror, wood stove, sink, refrigerator, cooking utensils, clothes in open closet, shoes and boots, hats, and purses.
4. Library center - included rug, chair, soft-cushion sofa, bookshelf and assorted books, bulletin board. This area can be used in small group time activity.
5. Art center - included the easel for painting, old newspaper for dropping paint, brushes, paints, apron. Sometimes the water table was located in this center.
6. Block center - included many sizes and shapes of wooden blocks, firefighter hats, and airplanes.
7. Music center - included piano, flags, records, record player, tape-player, movie projector, and other kinds of musical instruments: drums, bells, etc.
8. Large motor center - included the tunnel made from a barrel, ladders, old mattress, a Spring-o-lene, and punching bag.

The outdoor playground had many facilities, such as: tricycles, jungle gym, slide, swing, see-saw, sand area, carpenter area, plantation area, fallen tree for climbing,

and the garage which can be decorated in many kinds of dramatic play.

The bathroom facilities were located inside the building next to or opposite the classrooms. The storage equipment and furnishings were child size and arranged so that the children could select what they needed and then put away materials independently. Each child had his own locker in which to put his belongings such as sweaters, work sheets, and toys brought from home.

Subjects

The subjects in the present study consisted of 48 three, four, and five year olds who were enrolled in all five Child Development Laboratories at Oklahoma State University. There were 16 (7 male, 9 female) three year olds; 16 (8 male, 8 female) four year olds; and 16 (8 male, 8 female) five year olds. Mean age for the group was 53.8 months. All subjects were randomly selected so each individual had an equal opportunity to be a subject for this study. The children were homogeneously grouped in the sense that they came from predominantly middle class families in the Stillwater area.

Procedure

During the first week of the study, two observers recorded behavioral events by using the observational record sheet for two 1-hour sessions in the classroom

setting. The interobserver reliability was computed as 0.96.

All 48 subjects were administered the Preschool Embedded Figures Test (PEFT) by a graduate student who was familiar to the children. Children were told that they were going to play some games with the experimenter and were taken individually to the testing place inside the classroom or close by in a place free from distracting stimuli but familiar to the children. Testing for each child did not last longer than 25 minutes. After each child had finished the testing, he was thanked for participation and escorted back to the classroom.

The observation and recording of interpersonal interactions and levels of social participation were collected by a person other than the person administering the PEFT and simultaneously with the administration of the PEFT. The data collection was made at least twice per week for all five laboratories. Each period lasted approximately one hour and a half and involved two cycles of observation. One cycle consisted of 5 events. Each event was signaled by an elapse of 30 seconds for a particular child. The observer recorded the event which was taking place on the observational record sheet (see Appendix). The time span covered by a complete cycle was 150 seconds. When cycle A was completed for all children, then the first child was observed for a second time and the child's behavior was recorded under cycle B. The order of obser-

vation was randomized daily.

The eight weeks period of observation was to insure at least twelve one and a half hour visits. Twelve is the recommended number of observational visits to record stable and reliable behavior across time (Medley & Mitzel, 1963).

Cognitive Style Measure

The Preschool Embedded Figures Test (PEFT) developed by Coates (1972) was used as a measure of cognitive style. The PEFT was developed specifically for children aged 3 to 5 years. The child is required to locate a simple equilateral triangle embedded in the complex figure for each of 24 items. The PEFT score for each child can range from 0 to 24.

Reliability

Coates (1972) reported the reliability estimate of the PEFT range from .74 to .91 for children aged 3 to 5 years. Equally high PEFT reliability is reported by Derman and Meissner (1972). In the PEFT manual, Coates adds that the disembedding skill increases with age. The PEFT mean for girls (8.81) is slightly higher than the mean for boys (7.84). Coates (1972) also reports test-retest correlations over a 5-month interval ranging from .69 to .75 in three small samples of 3 and 4 year old boys and girls. As the time interval between testing increased, the coefficients

of stability declined. Block and Block (1973) examined the stability of the PEFT scores over a one year period with 3 and 4 year olds, and obtained coefficients of .49 for 38 boys and .52 for 42 girls.

Validity

Construct validity was determined by using the Wechsler Preschool and Primary Scale of Intelligence (WPPSI) (Coates, 1972; Coates and Bromberg, 1973). The PEFT was found to load a perceptual-analytic factor (Block Design and Geometric Design) and not to load a verbal-comprehensive factor (Information, Vocabulary, Similarities, Comprehension, and Sentences) for children between the age of 4 to 6½ years.

Observational Instrument

The observational instrument in this study was patterned after the Personal Record of School Experiences (PROSE) developed and used by Medley, Quirk, Schluck, and Ames (1971) in a study of disadvantaged children and their first school experiences. Later the PROSE was adapted and used by Castle and Richards (1979). Although it was modified to be shorter, it is still similar in concept and design to the original PROSE instrument. The observational instrument was used to obtain the record of frequency of interpersonal interactions and the level of social participation categorized by Parten (1932); i.e.,

onlooker behavior, solitary, parallel, associative, and cooperative play.

Reliability

The cross time reliability estimate of PROSE was .92 for peer interactions and .60 for adult interactions (Castle, 1975).

Analysis of Data

The Pearson Product Moment formula was used to conduct two correlational analyses: (1) determine the relationship of cognitive style (PEFT score) to interpersonal interactions, and (2) determine the relationship of cognitive style (PEFT score) to level of social participation of the children.

The interpersonal interaction score of each child was summed across the eight weeks period of observation. The number of social participations was found by assuming that each level of social participation is different from the next level by one unit; solitary play has a score of one unit; onlooker behavior has a score of two units; parallel play has a score of three units; associative play has a score of four units; and cooperative play has a score of five units. The number of participation in each level is multiplied by the number of that particular unit. Finally, the scores of the five units were summed to give one social participation number for each child.

An additional category called other behavior has been added to the levels of social participation. The behaviors that can not be classified by Parten's categories were recorded in other behavior category, for example, teacher reads a story to the child, teacher and child discuss discipline, bathroom activities, and accidents.

Furthermore, correlations were made of the PEFT score with age, sex, and other behavior; and of the frequency of interpersonal interactions with sex. The Pearson Product Moment formula was used for the correlation of PEFT score with age and other behavior, while the Point-biserial formula was used for the correlation of PEFT score with sex, and for the correlation of frequency of interpersonal interactions with sex.

With 48 subjects, a correlation of .236 was required to reject the null hypothesis at the .05 level of significance (one tail test). With 16 subjects at each age range (3, 4, and 5 years) a correlation of .426 at the .05 level and .574 at the .01 level were required to reject the null hypothesis.

CHAPTER IV

RESULTS

Developmental Trend

The frequency of interpersonal interactions and social participations were summed at the end of the eight weeks period of observation. Table I shows the means and standard deviations of frequency of interpersonal interactions, level of social participations, and the PEFT scores for 3, 4, and 5 year olds and also for all subjects. The mean score of frequency of interpersonal interactions for age 3, 57.50 was obtained by dividing the sum of frequencies of interpersonal interaction by the number of subjects (16). In this manner, the mean scores for age 4 and 5 year olds were derived, 60.75, 66.69, respectively. The mean score for all 48 subjects is 61.65.

For the mean scores of social participation, the number of participations in play behavior with peers and adults at each level (i.e. solitary, onlooker, parallel, associative, and cooperative) was multiplied by the corresponding unit assumption (1, 2, 3, 4, and 5) and then summed. These scores were divided by the number of subjects, for age 3, 4, and 5. Mean scores for social participation are 445.31,

446.44, and 478.13, respectively. The mean score for all 48 subjects is 463.29.

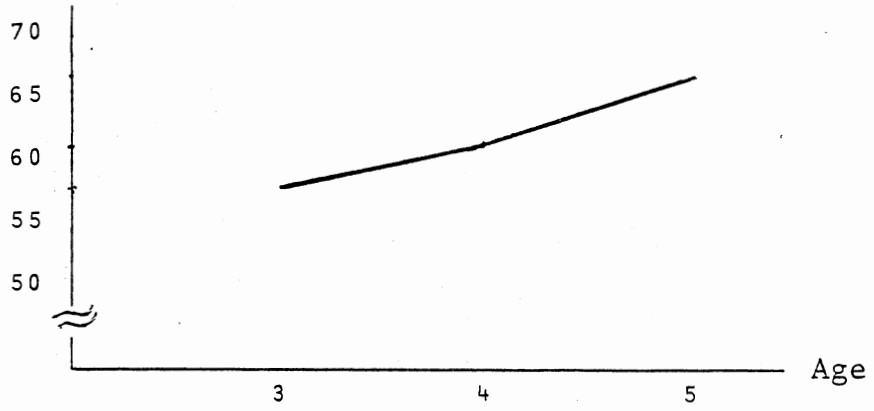
The mean scores for the PEFT were obtained by dividing the sum of the PEFT scores for each age by the number of subjects. For this study, the mean scores of the PEFT are 14.63, 16.56, 18.19 and 16.46 for age 3, 4, 5, and all ages, respectively.

TABLE I

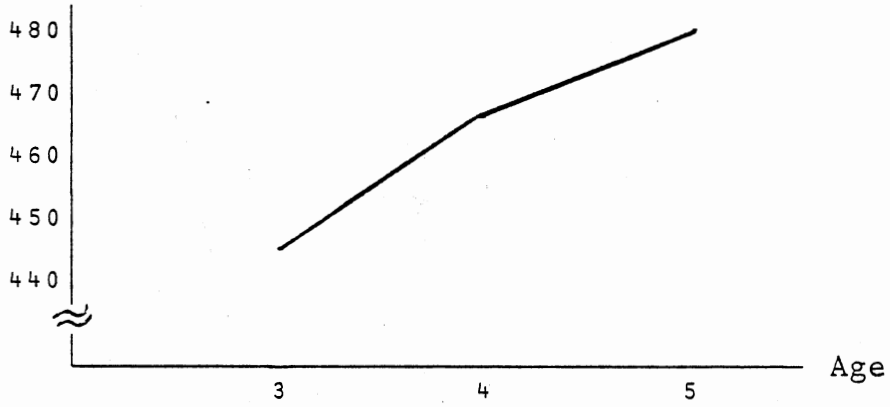
$\bar{X}$ & SD OF FREQUENCY OF II, SOCIAL PARTICIPATION & PEFT

Age	N	$\bar{X}_{II}$	$\bar{X}_{Soc.\ Par.}$	$\bar{X}_{PEFT}$	SD_{II}	$SD_{Soc.\ Par.}$	SD_{PEFT}
3	16	57.50	445.31	14.63	11.66	32.82	3.00
4	16	60.75	466.44	16.56	15.19	32.14	4.33
5	16	66.69	478.13	18.19	12.87	32.44	3.98
All	48	61.65	463.29	16.46	13.84	35.51	4.07

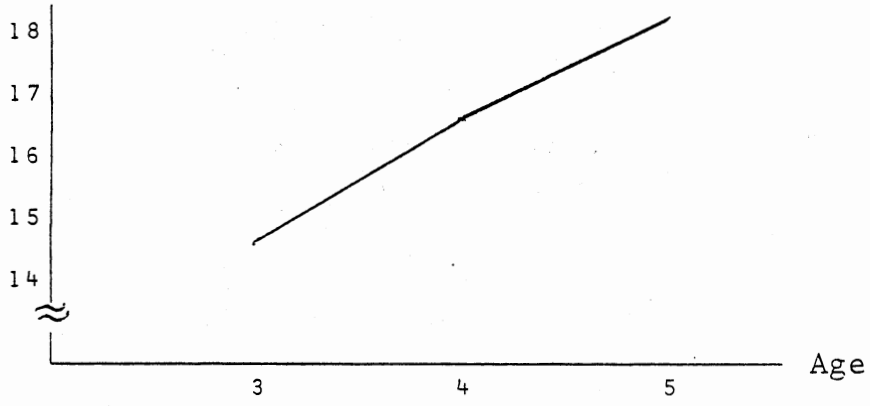
Figure 1 indicates age differences and shows a developmental trend with 3 year olds scoring lowest, 4's in the middle, and 5's highest on all measures. These developmental trends are consistent with those of previous researchers.



a) Mean of Frequency of II



b) Mean of Social Participation



c) Mean of PEFT Scores

Figure 1. $\bar{X}$ Scores for 3, 4, and 5 Year Olds

Correlation Findings

Pearson Product Moment correlations for the frequency of interpersonal interaction and PEFT score, social participation and PEFT score, and Point-biserial correlations for the frequency of interpersonal interaction and sex, social participation and sex, PEFT score and sex, were obtained by using Guilford and Fruchter's (1973) Fundamental Statistic in Psychology and Education. Table II presents the correlational analysis for this study.

TABLE II

CORRELATIONAL ANALYSIS

Age	N	II / PEFT	Soc.Par. / PEFT	Other beh. / PEFT	II / SEX	Soc.Par. / SEX	PEFT / SEX
3	16	.09	.16	.14			
4	16	-.06	.17	-.06			
5	16	.02	-.25	.27			
All	48	.09	.11	.03	-.07	.38**	-.38**

**Significant at .01 level.

Interpersonal Interaction and PEFT Score

The prediction that children who engage in greater

frequency of interpersonal interaction would have a higher score on the PEFT than children who engaged in less frequency was not supported. There was a nonsignificant, negative correlation of interpersonal interaction and PEFT scores for age 4, $r = -.06$.

Social Participation and PEFT Score

The prediction that children who have a field independent cognitive style (high score on the PEFT) would engage in higher levels of social participation, was not supported. At age 5, there was a nonsignificant negative correlation of -.25 while for 3 and 4 year old groups there was a nonsignificant positive correlation.

Other Behavior Category and PEFT Score

The other behavior category which had been added to the social participation categories of Parten (1932), was computed to investigate the correlation with the PEFT score. The result was similar to the correlation of frequency of interpersonal interaction with PEFT score which is statistically not significant.

Sex, Frequency of Interpersonal Interaction, Social Participation, and PEFT Scores

Sex has been found to correlate significantly with social participation, and with PEFT scores for all subjects.

Females participated in higher levels of social participation as defined by the categories of Parten (i.e., associative and cooperative play).

There were no significant sex differences in interpersonal interaction in this study. There was a non-significant negative correlation for sex and frequency of interpersonal interaction, $r = -.07$. It could be that at these young age levels, sex differences in interpersonal interaction have not yet begun to appear.

CHAPTER V

DISCUSSION

There appears to be a developmental trend in all three of the individual measures investigated in this study. The older the child, the more frequently he engages in interpersonal interaction, participates in higher levels of social play, and has more ability to disembed figures.

Parten (1932, 1937) found in nursery school children that as a rule the youngest children either play alone or in parallel group, while the older children play with others in higher levels of social participation. As a result of the eight-week period of observation in free-play situations possibly made the present study lends support to Parten's findings in which as the age of children increased, the frequency of interpersonal interaction also increased.

Parten (1932) states that the social quality of play follows a sequence with solitary and parallel play predominantly at earlier ages, and associative and cooperative play predominantly in older preschoolers. Smilansky (1968) who elaborated the cognitive play categories from Piaget's theory, also states that the cognitive play categories (functional play, constructive play, dramatic play, and games with rules) develop in a fixed sequence. Similar

results were found in Barnes (1971); Rubin (1976); Rubin (1977); Rubin and Krassner (1979); Rubin, Watson, and Jambor (1978); Spenseller and Jaworski (1979); and Smith (1978). The finding in the present study is in line with the above studies in which social participation behaviors develop in a fixed sequence as age increases.

Witkin, Goodenough, and Karp (1967) and Witken et al. (1977) state that cognitive style is stable over time. It does not imply that it is unchangeable, but we can predict with some accuracy that people who have a particular cognitive style one day will have the same style the next day, month, and perhaps even years later. Coates (1972) and Coates et al. (1975) reported a significant progressive increase across the age span 3 to 6 years in level of disembedding skill on the PEFT. Dermen and Meissner (1972) also found a similar increase in children ranging from 42 to 65 months of age. The present study's finding is consistent with their results in that there is a developmental trend in disembedding ability in preschool children.

Some studies indicate sex differences in social participation, that female preschoolers engage more in sedentary activities, while male preschoolers engage in dramatic play (Rubin, 1976; Rubin et al., 1976; Moore et al., 1974; and Rubin et al., 1978). However, Coates (1972) and Coates et al. (1975) presented results in the opposite direction. Preschool age females engage more in social play than their male counterparts. These contradictory findings

are possibly due to the different kind of technique used to record the social participation behaviors. While Coates (1972) and Coates et al. (1975) used a teacher-rating technique, Rubin (1976) and others used a time-sampling technique to record the social participation behavior in free play situation. The present study of preschool children in which a time-sampling (the PROSE) was employed, supports the conclusion of Coates (1972) and Coates et al. (1975) that there is a significant sex difference in level of social participation. Preschool age females engaged more in associative and cooperative play than their male counterparts ($r = .38$; $p < .01$). So further study is recommended to investigate these contradictory findings.

Moreover, Coates (1972) and Coates et al. (1975) reported that preschool age females had higher scores on the PEFT and had field independent cognitive styles while preschool age males had lower scores on the PEFT and had field-dependent cognitive styles.

Herman (1968) studied the standardization of the Wechsler Preschool and Primary Scale of Intelligence and found that overall during the age range of 4 to 6½ years, females performed significantly better than males on the Block Design subtest, a measure that Coates (1972) indicated to be highly correlated with performance of the PEFT and loading the same factor. Kogan (1976) also supported this conclusion. In contrast, the present study shows the opposite result that preschool femalss scored significantly

lower than their male counterparts ($r = -.38$; $p < .01$). These contradictory findings were possibly due to using young preschool children as subjects. Further study seems needed to reexamine the relationship of sex differences to cognitive style.

The major prediction that children who have higher scores on the PEFT would engage in greater frequency of interpersonal interaction was not found to be statistically significant. Lack of statistical significance was possibly due to too small a number of subjects (which lowers the power of the statistical test). A greater number of subjects is suggested for future studies.

There are very few studies done with young children, 3 to 5 years of age, in the area of cognitive style and social interaction (Beller, 1958; Nadeau, 1968; Coates, 1972; Coates et al., 1975; Dreyer et al., 1975; Bowd, 1975). At these younger ages, children do not have much experience with other than family members. As the child comes to school, he engages in more social interaction and has more peer contacts. Parten (1932) states that familarity with the school environment determines the readiness with which the child enters into group play. It could be that the age of the subjects in the present study was too young. If older subjects had been used, there may have been greater evidence of interpersonal interaction, level of social participation, and cognitive style. Therefore, it is recommended that future studies involve an older sample of

children such as children from 5 to 7 years.

The second prediction that children who have higher scores on the PEFT would engage more in higher levels of social participation (associative and cooperative play) was also not statistically significant. Smith (1978) concluded in her study of 2-3 and 4 year olds that most 3- and 4-year olds are in the same period of moving from mainly solitary to mainly group behavior. It implies that there are no clear cut of play behavior between 3 and 4 year olds. Therefore, it is suggested that future investigation use a broader age range (i.e., 3-5-7 year olds) in order to present more visible differentiation of the levels of social participation of age.

The developmental trend in the present study shows that as children get older, the frequency of interpersonal interaction, level of social participation, and the PEFT scores increased. In addition, increasing the number of subjects; using an older sample; and broadening the age range; are recommended for future investigation. It is also suggested that an observational period of an entire school year (9 months) would provide a more accurate indication of stable behavior across time.

Conclusion

The results of the present study give support to Piaget's and Parten's belief that play behavior of preschool children changes in the direction predicted by their work

as age increases. There appears to be a developmental trend in frequency of interpersonal interaction, social participation, and in cognitive style. However, the results of the present study neither suggest that field independent cognitive style preschool children engage more frequently in interpersonal interaction, and in higher levels of social participation, nor that field dependent cognitive style preschool children engage more frequently in interpersonal interaction and in higher levels of social participation. Therefore, additional study is necessary in order to examine the relationship of cognitive style, interpersonal interaction, and social participation of preschool children.

Since the power of the statistical test was limited in the present study, working with a larger number of subjects who are older and in a wider range of ages is recommended for further study. Future investigation should also allow for a much longer period of time in observation to present more stabilized free play behaviors. Finally, since no study had investigated the comparison of the teacher-rating technique in the PROSE technique in recording the frequency of interpersonal interaction and level of social participation, further study should use both, teacher-rating technique and the PROSE technique which could provide more accurate play behavior. Further study including the above mentioned improvements should more conclusively test the hypotheses of the present study.

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APPENDIX

OBSERVATIONAL SHEET

Name of child _____ Week _____

Teachers 1. _____ Date _____

2. _____ Lab _____

3. _____

4. _____

	Cycle A					Cycle B				
1. Interaction Yes No	1	2	3	4	5	1	2	3	4	5
2. Person involved A = Adult C = Child	1. _____					1. _____				
	2. _____					2. _____				
	3. _____					3. _____				
	4. _____					4. _____				
	5. _____					5. _____				
3. Type of play 0 = Onlooker S = Solitary P = Parallel As = Associative Co = Cooperative Ot = Others	1. _____					1. _____				
	2. _____					2. _____				
	3. _____					3. _____				
	4. _____					4. _____				
	5. _____					5. _____				

VITA

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